

What is claimed is:

1. A wireless communication network comprising:
a plurality of nodes, each having at least one dynamically
directionally controllable communications link; and
5 a network controller for dynamically changing the direction
of the controllable communications links of the nodes to enable transmission of
signals between the nodes.
2. The wireless communication network of claim 1, wherein
each of the dynamically directionally controllable communications links comprises
10 one of:
an electronically steerable narrow antenna beam and a
switchable antenna beam.
3. The wireless communication network of claim 1, wherein
selected ones of the nodes further include an additional dynamically directionally
15 controllable communications link.
4. The wireless communication network of claim 1, further
comprising:
a low data rate signaling channel for transmitting control
information from the network controller to the nodes.
- 20 5. The wireless communication network of claim 4, wherein
the signaling channel includes:
a wide-angle antenna beam at each of the nodes.
6. The wireless communication network of claim 1, wherein
the network controller controls the directions of the controllable communications
25 links according to an assignment table that maps time slots to node pairs.
7. The wireless communication network of claim 1, wherein
the network controller changes the direction of the controllable communications
links during a guard interval between the transmission and reception of information
signals between pairs of the nodes.
- 30 8. The wireless communication network of claim 1, wherein
each of the nodes includes:

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an antenna producing at least one dynamically directionally controllable beam.

9. The wireless communication network of claim 8, wherein each of the dynamically directionally controllable beams is a narrow beam.

5 10. The wireless communication network of claim 1, further comprising:

means for connecting one of said nodes to a backbone circuit.

11. The wireless communication network of claim 1, wherein at
10 least one of said nodes is a satellite; and at least one other of said nodes is a ground station.

12. A method for transmitting communications signals comprising the steps of:

15 providing a plurality of nodes for receiving communications signals, each having at least one dynamically directionally controllable communications link; and

dynamically changing the direction of the controllable communications links of the nodes to enable transmission of the communications signals between the nodes.

20 13. The method of claim 12, further comprising the step of: transmitting control information from the network controller to the nodes on a low data rate control channel.

14. The method of claim 12, wherein the network controller controls the directions of the controllable communications links according to an
25 assignment table that maps time slots to node pairs.

15. The method of claim 12, wherein the network controller changes the direction of the controllable communications links during a guard interval between the transmission and reception of information signals between pairs of the nodes.

30 16. The method of claim 12, further comprising the step of: connecting one of said nodes to a backbone circuit.

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17. The method of claim 12, further comprising the steps of:
dynamically spreading the communications signal over
multiple routes among the nodes; and
reassembling the communications signal at a predetermined
5 node.

18. A wireless communication network comprising:
a hub node having at least one dynamically directionally
controllable communications link;
a plurality of remote nodes; and
10 a network controller for dynamically controlling the
direction of the communications link to enable transmission of signals between the
hub node and the remote nodes.

19. The wireless communication network of claim 18, wherein
each of the dynamically directionally controllable communications links comprises
15 one of:
an electronically steerable narrow antenna beam and a
switchable antenna beam.

20. The wireless communication network of claim 18, wherein
the hub node further includes an additional dynamically directionally controllable
20 communications link.

21. The wireless communication network of claim 18, further
comprising:
a low data rate signaling channel for transmitting control
information from the network controller to the hub node.

22. The wireless communication network of claim 21, wherein
the signaling channel includes:
a wide-angle antenna beam at the hub node.

23. The wireless communication network of claim 18, wherein
the network controller controls the directions of the controllable communications
30 links according to an assignment table that maps time slots to node pairs.

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24. The wireless communication network of claim 18, wherein the network controller changes the direction of the controllable communications links during a guard interval between the transmission and reception of information signals between pairs of the nodes.

5 25. The wireless communication network of claim 18, wherein the hub node includes:

an antenna producing at least one dynamically directionally controllable beam.

26. The wireless communication network of claim 25, wherein
10 the dynamically directionally controllable beam is a narrow beam.

27. The wireless communication network of claim 18, further comprising:

means for connecting one of said hub nodes and said remote nodes to a backbone circuit.

15 28. The wireless communication network of claim 18, wherein at least one of said remote nodes is a satellite; and the hub node is a ground station.

29. A method for transmitting communications signals comprising the steps of:

20 providing a hub node for receiving communications signals, the hub node having at least one dynamically directionally controllable communications link;

providing a plurality of remote nodes for exchanging the communications signals with the hub node; and

25 dynamically changing the direction of the controllable communications links of the hub node to enable transmission of the communications signals between the hub node and the remote nodes.

30. The method of claim 29, further comprising the step of:

30 transmitting control information from the network controller to the hub node on a low data rate control channel.

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31. The method of claim 29, wherein the network controller controls the direction of the controllable communications link according to an assignment table that maps time slots to node pairs.

5 32. The method of claim 29, wherein the network controller changes the direction of the controllable communications link during a guard interval between the transmission and reception of information signals between the hub node and one of the remote nodes.

10 33. The method of claim 29, further comprising the step of:
connecting one of the hub node and the remote nodes to a backbone circuit.

15 34. The method of claim 12, further comprising the steps of:
separating a message transmitted by the communications signals into segments; and
distributing the segments to different ones of the nodes; and
reconstructing the message at a destination node.

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